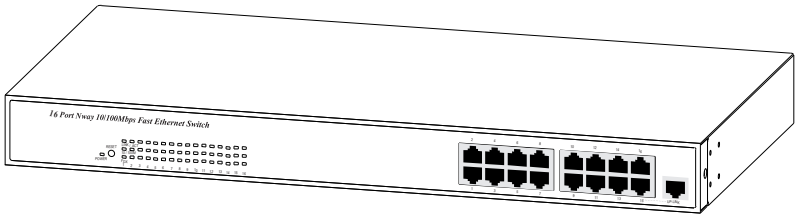
16 Port Nway Fast Ethernet Switch

User's Manual



FCC Warning

This device has been tested and found to comply with limits for a Class B digital device, pursuant to Part 2 and Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and radiates radio frequency energy and, if not installed and used in accordance with the user's manual, may cause interference in which case user will be required to correct the interference at his own expense.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

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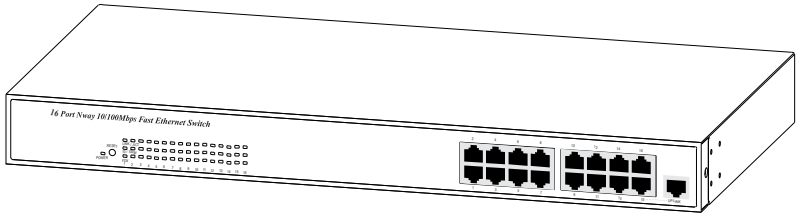
Chapter 1

16 Port Nway Fast Ethernet Switch

Introduction

The Switch provides 16 10/100Mbps ports. The Switch was designed for easy installation and high performance in an environment where traffic on the network and the number of user increase continuously.

With the Rack-mount size was specifically designed for ROBO (Remote Office & Branch Office) and medium to large workgroups. The Switch can be installed where space is limited; moreover it provides smooth network migration and easy upgrades to network capacity.



Key Features

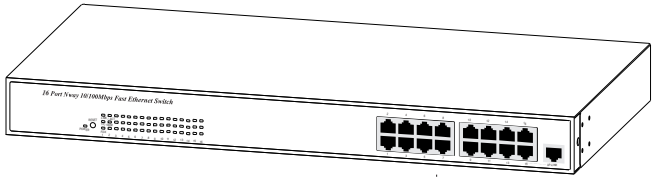
- 16 Port 10/100Base T/TX Nway (Auto-negotiation) Switch with RJ-45 connectors. Plus 1 fiber (100Base-FX) module port
- 19-inch standard Rack- mount size
- Auto-detect of Full/Half-duplex modes in all ports
- Dedicated full-duplex 200Mbps bandwidth on each port
- Broadcast storm control
- Store & Forward switching methods
- IEEE 802.3x flow control for Full-duplex
- Zero-Packet Loss Back-pressure flow control for Half-duplex
- Non-blocking & Non-head-of-line blocking full wire speed forwarding
- Auto-learning of networking configurations
- Provided front panel reset button
- Status LEDs: Power, Speed, Link/Activity And Full/Half-duplex
- Smart plug & play

Chapter 2

Package Contents

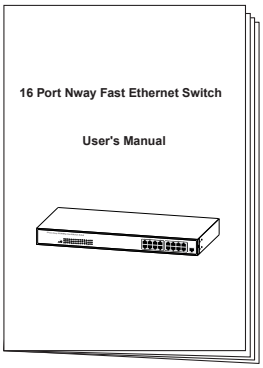
Before you start to install the Switch, please verify your package that contains the following items:

- One Fast Ethernet Switch
- Rack-mount Kit For Rack Installation
- One Power Cord
- One User's Manual

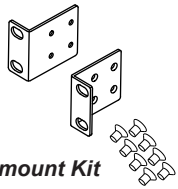


16 Port Switch

User's Manual



Power Cord



Rack-mount Kit

Note: If any of these items is found missing or damaged, please contact your local supplier for replacement.

Chapter 3

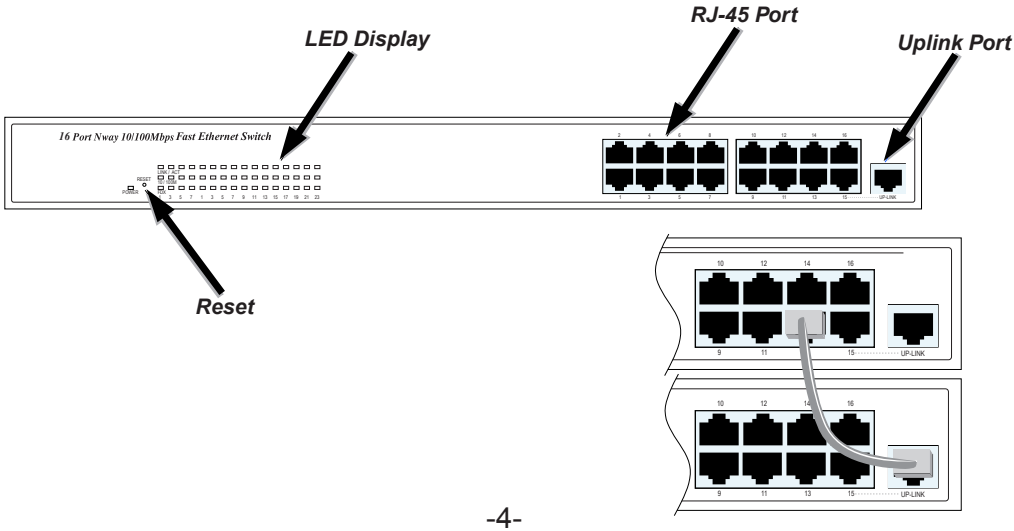
Front Panel Layout

I. 16 RJ-45 10/100Mbps Switch Ports

There are 1~16 RJ-45 connectors on the front panel for connecting to servers, workstation or other devices. The Switch provides 16 10/100Mbps switching ports that could sense the 10/100M speed and negotiate Full/Half-duplex mode automatically. These switching ports allow users to connect the Switch to 10BASE-T and 10ASE-TX devices.

II. Uplink Port

Uplink port shared with the port #15 for expanding to another Hub or Switch. The Uplink port and port 15 share the same port & function. Do not use both of the Uplink port and port 15 at the same time.

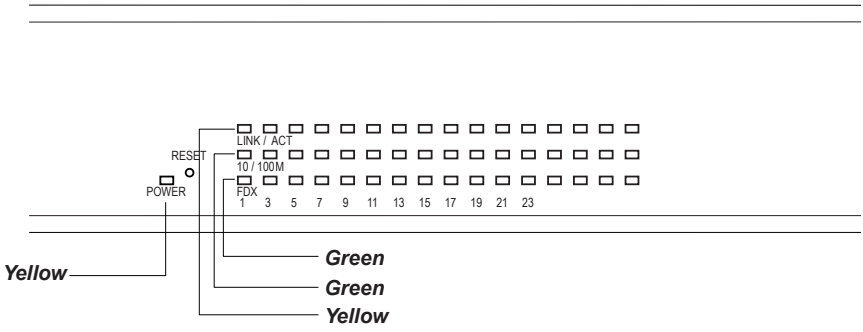


III. LED Indicators of 16 Port 10/100Mps Switch

LED	Color	Status	Description	No. Of LED
Power	Yellow	On	Power on	1
FDX	Green	On	Full-duplex	16(1~16)
		Off	Half-duplex	16(1~16)
		Flashing	Partial collision occurs	16(1~16)
10/100M	Green	On	Port is on the 100M status	16(1~16)
		Off	Port is on the 10M status	16(1~16)
LINK/ACT	Yellow	On	10/100Mbps port for connection	16(1~16)
		Flashing	10/100Mbps for data activating	16(1~16)

IV. Reset

Allows the users refresh Automatic-learning of network configuration.



V. LED Definitions

Power LED	
On	: The unit is powered on and ready for use.
Off	: The unit is powered off.
FDX	
On	: The port is operating at Full-duplex.
Off	: The port is operating at Half-duplex without any data being transmitted or received.
Flashing	: Collisions occurred and the port is operating at Half-duplex mode.
10/100M LED	
On	: The port is on the 100Mbps status.
Off	: The port is on the 10Mbps status.
LINK/ACT LED	
On	: The port is ready for 10/100Mbps connection.
Flashing	: The data is transmitted or received on the port.

Chapter 4

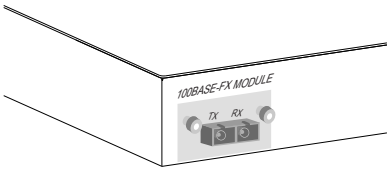
Rear Panel Layout

I. AC input

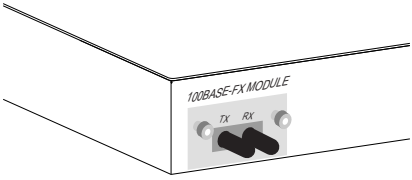
AC input (90~260V/AC, 50~60Hz) UL Safety.

II. Optional Module

This 100BASE-FX Module is for use with Fiber Optics cable with one SC or ST type connector.



SC mode



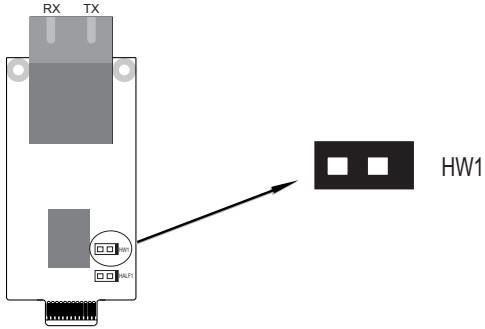
ST mode

The fiber module supports non-console switch with hardware setting. For console switch, the fiber module supports software setting. Please refer to the following procedures at page 8:

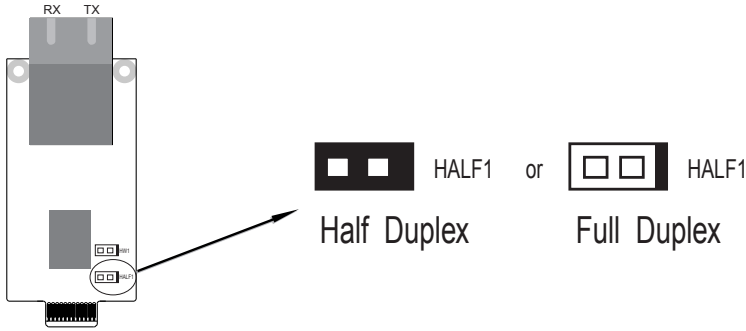
Hardware Setting

To setup duplex mode of fiber port.

Step 1: To inset HW1 PIN. (Hardware configuration)



Step 2: To set up the fiber port to Half-duplex mode, please inset the HALF1 pin. In addition, to change the fiber port to Full-duplex, please pull out the HALF1 pin.



Software Setting

If your Switch supports console port, please use the software setting. For detail information, please to see the console port user's manual.

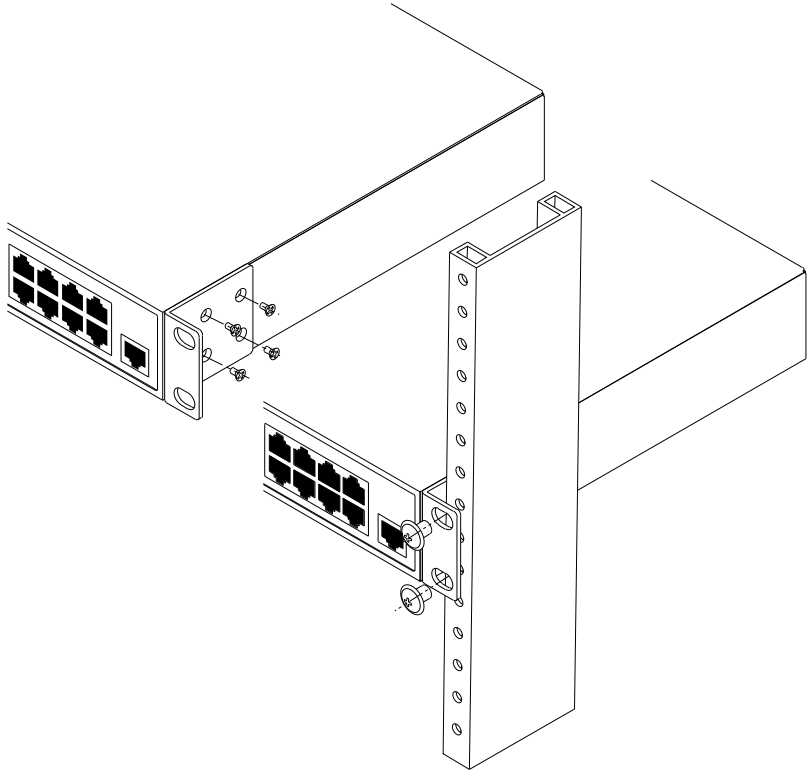
Note: The power must be turned off before inserting or removing modules.

Chapter 5

Rack Mounting

Optional Rack-mounting brackets are available to mount Switch in standard EIA 19-inch rack. 16 port 10/100Mbps Switch is supplied with two mounting brackets, eight screws.

First, put the Switch on the flat surface. Locate the mounting bracket on the sides of the Switch with the mounting holes on each. Next, insert the screw through the bracket and into the bracket mounting holes in the Switch. Then, place the Switch in to 19-inch rack.

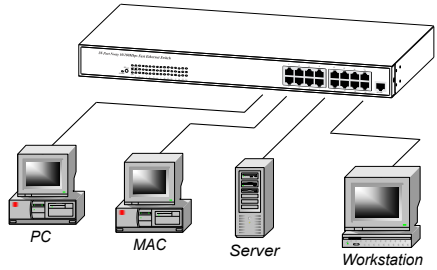


Chapter 6

Installation

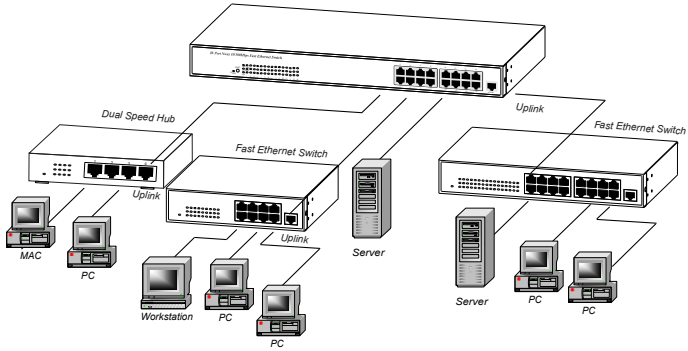
I. To connect the Switch to PCs, servers, and other network devices.

Use straight-through twisted-pair cable (Cat. 5) to connect the Switch to PCs, servers and other network devices. Networks can be built as figure shown.



II. To connect the Switch to a Switch or a Hub

Use straight-through twisted pair cable to connect the Switch to another Switch or Hub on uplink port. If you connect the Switches on port 1 to port 16, the cable should be changed to crossover cable.

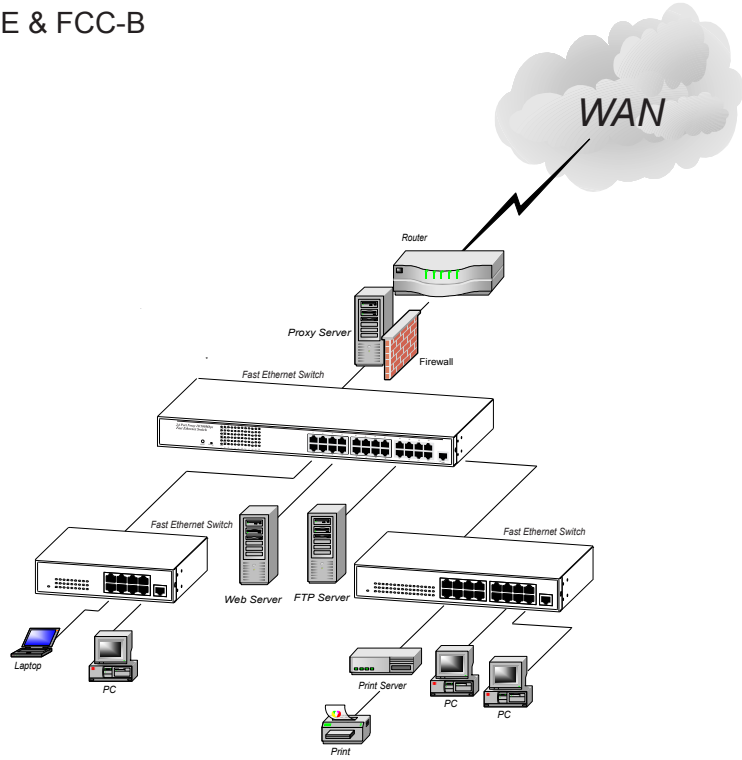


Chapter 7

Technical Specifications

1. Standards Compliance
   - IEEE 802.3 10BASE-T; IEEE 802.3u 100BASE-TX
2. Number Of Ports
   - 16 integrated ports: 10/100Mbps Nway port
3. Expansion Interface
   - 1 uplink port
4. Fully Flow Control Supported
   - Half-duplex mode: Backpressure
   - Full-duplex mode: IEEE 802.3x
5. Network Transmission Media
   - 10BASE-T Cat. 3, 4, 5 UTP/STP
   - 100BASE-TX Cat. 5 UTP/STP
6. Network Status Monitoring LEDs
   - Per port: LINK/ACT, 10/100M, FDX
   - System: POWER
7. Buffer Memory
   - RAM: 4Mbits per device
   - RAM buffer dynamically allocated for each port
8. Filter/Forward Rate
   - Packet Filtering/ Forwarding Rates
   100Mbps port - 148,800pps
   10Mbps port - 14,880pps
9. MAC Address
   - Up to 8K per device
10. Power
   - AC input (90~260V/AC, 50~60Hz) UL Safety
11. Power Consumption
   - 9.2 Watts (Max)

12. Operating Temperature
 - 0℃ ~ 60℃
13. Store Temperature
 - -20℃ ~ 90℃
14. Humidity
 - 10% ~90% RH (Non-condensing)
15. Dimension (L x W x H)
 - 440mm x 220mm x 44mm
16. Weight
 - 2.57 Kg
17. Safety & EMI Certificates
 - CE & FCC-B



DOC-UMWR160T001

Console Port

(16 Port Nway Switch)

User's Manual

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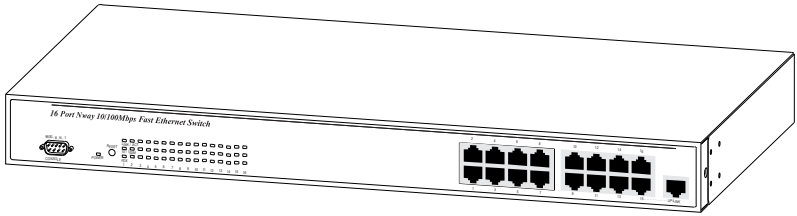
Chapter 1

Console port features overview

- Supports real time status read/write operation.
- Provided on line Link status.
- Supports port setting for N-Way or force mode operation.
- Supports Link Fault Tolerance on Trunking port.
- Supports 18 groups port based V-LAN.
- Two MAC-based Trunking groups from 2 to 6 ports of each.
- Supports Load Balancing on Trunking port.

16 Port Nway Smart Switch

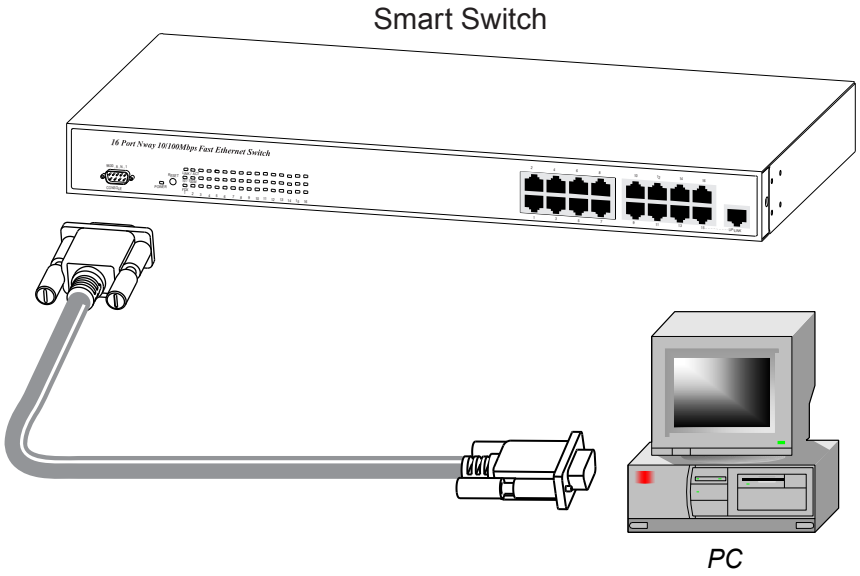


Chapter 2

Hardware installation
Accessories:

- One Null modem cable
- One D-SUB 9 pin female connector on front panel

Turn off your PC & Smart Switch powers, and then connect the cable from PC Serial port to Smart Switch D-sub connector.



Note: When you connect the cable from PC Serial port, please remember which serial port you connected. (Please refer to the step 3 of page 4)

Chapter 3

Software Setting
Open Hyper Terminal

Following the steps to open the program.

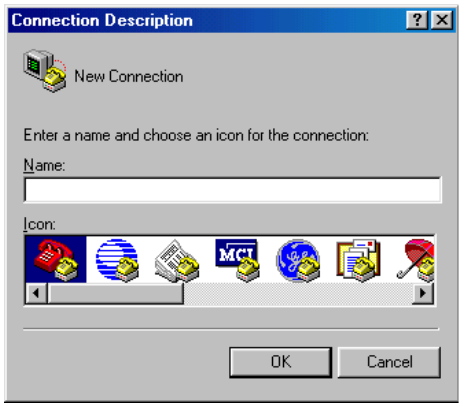
Step 1:

Start→Programs→Accessories→Communications→HyperTerminal

HyperTerminal
by Hilgraeve Monroe, Michigan USA
For more power and convenience, upgrade to hot new HyperACCESS for Windows 95 and NT, TODAY!
Developed for Microsoft by Hilgraeve Inc.
Upgrade Info...
Copyright 1998 Hilgraeve Inc.

Step 2:

Enter any name for new connection, and then press OK.



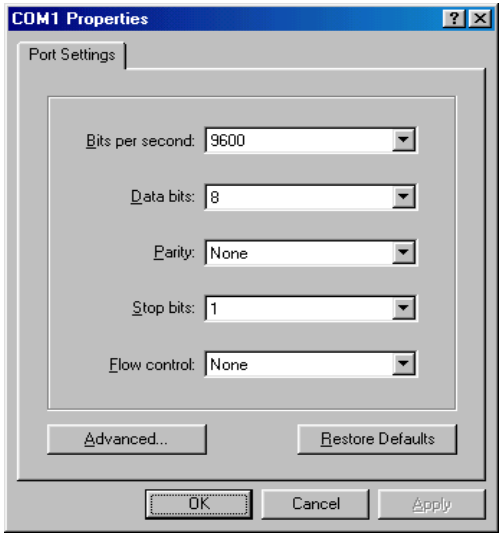
Step 3:

Choose serial port that you connect.

Step 4:

Configuration COM port properties.

Bits per second: **9600**
Data bits: **8**
Parity: **None**
Stop bits: **1**
Flow control: **None**



Step 5:

Press enter key at keyboard when you see the cursor blinking.

You will see

```
16 Ports Switch Setup V1.38
======== Main Menu ======
1. Port Setup
2. VLAN Setup
3. Trunk Setup
4. Restore Default Setup
5. View Setup
Select?_
```

The configuration on PC is successful.

Chapter 4

The Functions of Smart Switch

I. Port Setup
II. Optional Module (Port 18)
III. VLAN Setup
IV. Trunk Setup
V. Restore Default Setup
VI. View Setup

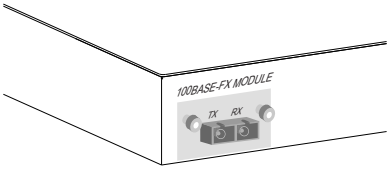
I. Port Setup

16 Ports Smart Switch has functions to setup on each port. You can disable Auto-negotiation to select Half/Full duplex mode, and the speed of 10/100Mbps. Besides each port has Link status indication. Factory default of each port is on N-Way enable status. When you enable the Auto-Negotiation (N-Way), the Speed & Duplex mode will follow N-Way status.

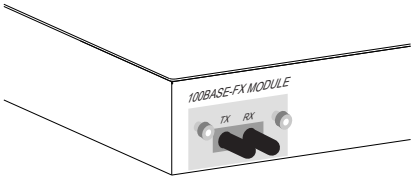
```
Select?1
------------------------------------------------------------------------
Port Setup:(1=100M,0=10M,F=Full,H=Half,E=Enable,D=Disable)
Port No:          1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18
Auto Negotiation:E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  x  x
Speed:           x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x
Duplex:          x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  F  F
Flow Control:    E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  E

m=Modify,q=Quit?_
```

II. Optional Module (Port 18)

This 100BASE-FX Module is for use with Fiber Optics cable with one SC or ST type connector.



SC mode

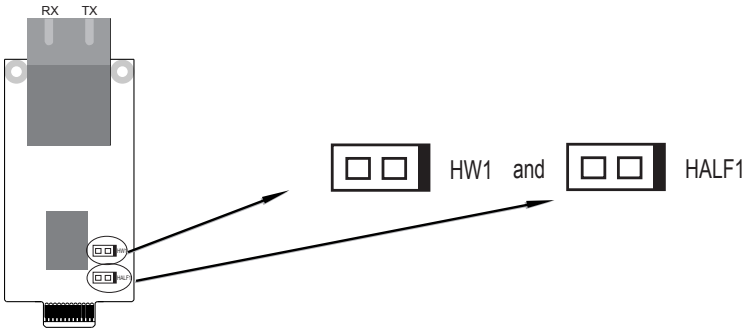


ST mode

The fiber module supports non-console switch with hardware setting. For console switch, the fiber module supports software setting at port 18 of port setup.

Note:

1. Before fiber module is plugged, please make sure the pin header of module board (HW1 & HALF1) is open.



2. The power must be turned off before inserting or removing modules.

III. VLAN Setup

The 16 ports smart switch can support up to 18 port-based security V-LANs. Each port can be assigned to up eighteen V-LAN. Every port is assigned to group 1 as the factory default. The V-LAN Frames from the source port will only be forwarded to destination ports within the same V-LAN domain. A broadcast/multicast frame will be forwarded to all ports that belong to V-LAN(s) of the source port. An unicast frame will be forwarded to the destination port only if the destination port is in the same V-LAN as the source port. Otherwise, the frame will be treated as a frame with unknown DA. (Frame with unknown DA will be forwarded to all ports).

Show below:

```
Select?2
------------------------------------------------------------
VLAN Setup:(v=At VLAN group)
      Port No
Group 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18
   1  v  v  v  v  v  v  v  v  v  v  v  v  v  v  v  v  v  v

m=Modify,a=Add,d=Delete,q=Quit?
```

IV. Trunk Setup

Port trunking is basically a method to treat multiple physical links as a single logical link. The benefit of trunking is to be able to group multiple lower speed links into one higher speed link.

For example, four full duplex 100 Mbit/s links can be used as one single 800-Mbps link.
This is very useful for Switch to Switch, Switch to server, and Switch to router application.

Factory default is no Trunk setting.

```
Select?3
Disable VLAN?(Y/N)y
----------------------------
Current Setup:
 Trunk 1:
 Trunk 2:

Can be Setup Trunk port no:
 Trunk 1: 9, 1,10, 2,11, 3
 Trunk 2:15, 7,16, 8
m=Modify,q=Quit?_
```

We divide the 16 ports of smart switch into 2 segments for users to set up the Trunk port easily.

- Trunk 1: you can select 2 ports Trunk; 4 ports Trunk, or 6 ports Trunk.
- Trunk 2: you can select 4 ports Trunk at most.

V. Restore Default Setup

Execute the commands to restore default setup.

Factory default of each port is on N-Way enable status, flow control enable and assigned to same V-LAN group at no any trunk port be assigned.

VI. View Setup

Execute the command to be aware of the status of Smart Switch, such as port link status, port operation mode, V-LAN groups or Trunk port status...etc.

```
Select?5
------------------------------------------------------------------------
VLAN Setup:(v=At VLAN group)
      Port No
Group 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18
   1  v  v  v  v  v  v  v  v  v  v  v  v  v  v  v  v  v  v

Press Any key
------------------------------------------------------------------------
Port Setup:(1=100M,0=10M,F=Full,H=Half,E=Enable,D=Disable)
Port No:          1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18
Auto Negotiation:E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  x  x
Speed:           x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x
Duplex:          x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  F  F
Flow Control:    E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  E  E

Press Any key_
```

DOC-UMWR160TC01